

CLAIMS

1. A light emitting element in which an organic compound film comprising a hole transporting material, an electron transporting material, a first impurity, and a second impurity is provided between an anode and a cathode, being characterized in that the organic compound film is laminated with a first mixed region comprising the hole transporting material and the first impurity, a hole transporting region comprising the hole transporting material, a second mixed region comprising the electron transporting material and the second impurity, and an electron transporting region comprising the electron transporting material in order from a side of the anode.

2. A light emitting element, according to claim 1, being characterized in that the first impurity and the second impurity comprise a coloring material.

3. A light emitting element, according to claim 1, being characterized in that a ratio of a film thickness of the hole transporting region to a total film thickness of the first mixed region and the hole transporting region is 10% or more.

4. A light emitting element, according to claim 1, being characterized in that a concentration of the first impurity in the first mix region is in the range of from 0.1% by weight to 10% by weight.

5. A light emitting element, according to claim 1, being characterized in that the light emitting element is mounted in an electronic apparatus selected from the group consisting of a video camera, a digital camera, a head mount display, a car

navigation system, a projector, a personal computer, and a portable information terminal.

6. A method for manufacturing a light emitting element in which an organic compound film comprising a hole transporting material, an electron transporting material, a first impurity and a second impurity is provided between an anode and a cathode, comprising, in the organic compound film, being characterized that the method has the steps of:

forming a first mixed region comprising the hole transporting material and the first impurity on the anode;

forming a hole transporting region comprising the hole transporting material on the first mixed region;

forming a second mixed region comprising the electron transporting material and the second impurity on the hole transporting region; and

forming an electron transporting region comprising the electron transporting material on the second mixed region.

7. A method for manufacturing a light emitting element, according to claim 6, being characterized in that the first impurity and the second impurity comprise a coloring material.

8. A method for manufacturing a light emitting element, according to claim 6, being characterized in that a ratio of a film thickness of the hole transporting region to a total film thickness of the first mixed region and the hole transporting region is 10% or more.

9. A method for manufacturing a light emitting element, according to claim 6, being characterized in that a concentration of the first impurity in the first mix region is in the range of from 0.1% by weight to 10% by weight.

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10. A method for manufacturing a light emitting element, according to claim 6, being characterized in that the light emitting element is mounted in an electronic apparatus selected from the group consisting of a video camera, a digital camera, a head mount display, a car navigation system, a projector, a personal computer, and a portable information terminal.

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11. A light emitting device having a light emitting element being characterized in that the light emitting element comprises: an anode; a first organic compound layer comprising a hole transporting material and a first impurity on the anode; a second organic compound layer essentially consisting of a hole transporting material on the first organic compound layer; a third organic compound layer comprising an electron transporting material and a second impurity on the second organic compound layer; a fourth organic compound layer essentially consisting of the electron transporting material on the third organic compound layer; and a cathode on the fourth organic compound layer.

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12. A light emitting element, according to claim 11, being characterized in that the first impurity and the second impurity comprise a coloring material.

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13. A light emitting element, according to claim 11, being characterized in that

a ratio of a film thickness of the hole transporting region to a total film thickness of the first mixed region and the hole transporting region is 10% or more.

14. A light emitting element, according to claim 11, being characterized in that
5 a concentration of the first impurity in the first mix region is in the range of from 0.1% by weight to 10% by weight.

15. A light emitting element, according to claim 11, being characterized in that
the light emitting element is mounted in an electronic apparatus selected from the
10 group consisting of a video camera, a digital camera, a head mount display, a car navigation system, a projector, a personal computer, and a portable information terminal.

16. A light emitting device being characterized by comprising: an anode; a first
15 organic compound layer comprising a hole transporting material and a first impurity on the anode; a second organic compound layer essentially consisting of a hole transporting material on the first organic compound layer; a third organic compound layer comprising an electron transporting material and a second impurity on the second organic compound layer; a fourth organic compound layer essentially consisting of the
20 electron transporting material on the third organic compound layer; and a cathode on the fourth organic compound layer.

17. A light emitting element, according to claim 16, being characterized in that the first impurity and the second impurity comprise a coloring material.

18. A light emitting element, according to claim 16, being characterized in that a ratio of a film thickness of the hole transporting region to a total film thickness of the first mixed region and the hole transporting region is 10% or more.

5 19. A light emitting element, according to claim 16, being characterized in that a concentration of the first impurity in the first mix region is in the range of from 0.1% by weight to 10% by weight.

10 20. A light emitting element, according to claim 16, being characterized in that the light emitting element is mounted in an electronic apparatus selected from the group consisting of a video camera, a digital camera, a head mount display, a car navigation system, a projector, a personal computer, and a portable information terminal.

15 21. A method for manufacturing a light emitting device being characterized by comprising the steps of:

 forming a first organic compound layer comprising a hole transporting material and a first impurity on the anode;

20 forming a second organic compound layer essentially consisting of a hole transporting material on the first organic compound layer;

 forming a third organic compound layer comprising an electron transporting material and a second impurity on the second organic compound layer;

 forming a fourth organic compound layer essentially consisting of the electron transporting material on the third organic compound layer; and

25 forming a cathode on the fourth organic compound layer.

22. A method for manufacturing a light emitting element, according to claim 21, being characterized in that the first impurity and the second impurity comprise a coloring material.

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23. A method for manufacturing a light emitting element, according to claim 21, being characterized in that a ratio of a film thickness of the hole transporting region to a total film thickness of the first mixed region and the hole transporting region is 10% or more.

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24. A method for manufacturing a light emitting element, according to claim 21, being characterized in that a concentration of the first impurity in the first mix region is in the range of from 0.1% by weight to 10% by weight.

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25. A method for manufacturing a light emitting element, according to claim 21, being characterized in that the light emitting element is mounted in an electronic apparatus selected from the group consisting of a video camera, a digital camera, a head mount display, a car navigation system, a projector, a personal computer, and a portable information terminal.

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